Minlon® 11C140 NC010

MINERAL REINFORCED NYLON RESIN

Common features of Minlon® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness /toughness, good high temperature performance, good chemical resistance, paintability, dimensional stability and low warpage.
Grades with improved electrical and flammability properties are available within the Zytel® nylon resin product line. In addition, Minlon® nylon resin is available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses.

The good melt stability of Minlon® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Minlon® nylon resin typically is used in demanding applications in the automotive, electrical, electronic, domestic appliances and construction industries.

Minlon® 11C140 NC010 is a 40% mineral reinforced, heat stabilized polyamide 66 resin for injection molding. It has very low warpage.

Product information

Resin Identification	PA66-I-MD40	ISO 1043
Part Marking Code	>PA66-I-MD40<	ISO 11469
ISO designation	ISO 16396-PA66-I,MD40,M1GHNR,S14-060	
Infrared spectrum	available	
TGA curve	available	ISO 11358-1

Rheological properties

	dry/cond.		
Molding shrinkage, parallel	1.3 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	841000 / 363000	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	12900 / 8700	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	10 / 24	%	ISO 527-1/-2
Tensile creep modulus, 1h	* / 315000	psi	ISO 899-1
Tensile creep modulus, 1000h	* / 203000	psi	ISO 899-1
Charpy impact strength, 23 °C	61.8 / N	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30 °C	38.1 / 38.1	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23 °C	2.85 / 4.28	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30 °C	2.38 / 1.9	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23 °C	2.62 / 4.28	ftlb/in²	ISO 180/1A
Izod notched impact strength, -30 °C	2.14 / 1.9	ftlb/in²	ISO 180/1A
Izod notched impact strength, -40 °C	1.9 / -	ftlb/in²	ISO 180/1A
Hardness, Rockwell, M-scale	86 / -		ISO 2039-2
Hardness, Rockwell, R-scale	120 / -		ISO 2039-2

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Thermal properties

	dry/cond.		
Melting temperature, 10 °C/min	493 / *	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	230 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	428 / *	°F	ISO 75-1/-2
Vicat softening temperature, 50 °C/h 50N	455 / *	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.47 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.472 / *	E-4/°F	ISO 11359-1/-2
Thermal conductivity of melt	0.27	W/(m K)	ISO 22007-2
Effective thermal diffusivity, flow	1.3E-7	m^2/s	ISO 22007-4
Specific heat capacity of melt	1900	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	149	°F	UL 746B
RTI, electrical, 1.5mm	149	°F	UL 746B
RTI, electrical, 3.0mm	149	°F	UL 746B
RTI, impact, 0.75mm	149	°F	UL 746B
RTI, impact, 1.5mm	149	°F	UL 746B
RTI, impact, 3.0mm	149	°F	UL 746B
RTI, strength, 0.75mm	149	°F	UL 746B
RTI, strength, 1.5mm	149 / *	°F	UL 746B
RTI, strength, 3.0mm	149	°F	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	0.0591 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.0319 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	in/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	4.3 / 12.6		IEC 62631-2-1
Relative permittivity, 1MHz	3.6 / 4.5		IEC 62631-2-1
Dissipation factor, 100Hz	120 / 4400	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	240 / 750	E-4	IEC 62631-2-1
Volume resistivity	- / 1E9	Ohm.m	IEC 62631-3-1
Surface resistivity	* / 1E14	Ohm	IEC 62631-3-2
Electric strength	914 / 686	kV/in	IEC 60243-1
Comparative tracking index	550 / -		IEC 60112

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.8 / *	%	Sim. to ISO 62
Water absorption, 2mm	5.7 / *	%	Sim. to ISO 62
Density	0.0523 / -	lb/in^3	ISO 1183
Density of melt	79.3	lb/ft^3	

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Emissions

	dry/cond.		
Emission of organic compounds	4.6	µgC/g	VDA 277
Odor test	3.5	class	VDA 270
Fogging, G-value (condensate)	0.1 / *	mg	ISO 6452

Injection

Drying Recommended	yes	
Drying Temperature	176	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	563	°F
Min. melt temperature	545	°F
Max. melt temperature	581	°F
Max. screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	212	°F
Min. mold temperature	158	°F
Max. mold temperature	248	°F
Hold pressure range	7250 - 14500	psi
Hold pressure time	0.0762	s/mil
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Ejection temperature	410	°F

Automotive

OEM	STANDARD
BMW	GS93016-PA66-MX40

Characteristics

Processing	Injection Molding
Additives	Release agent
Special characteristics	Heat stabilized or stable to heat, Low Warpage

Additional information

Injection molding

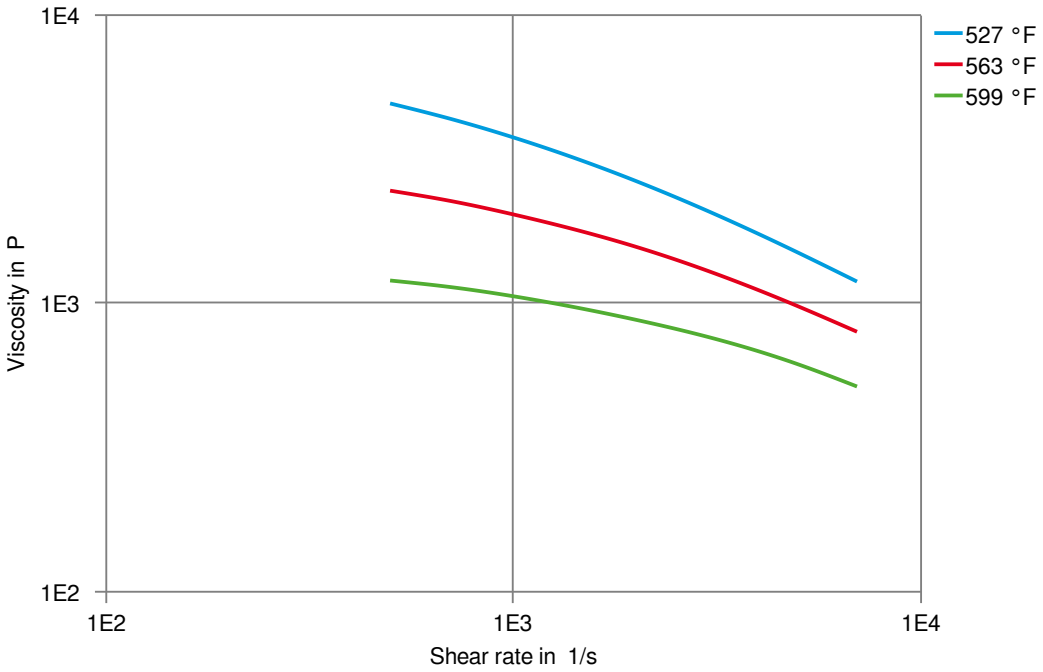
PROCESSING

Flow front speed : 100 mm/s

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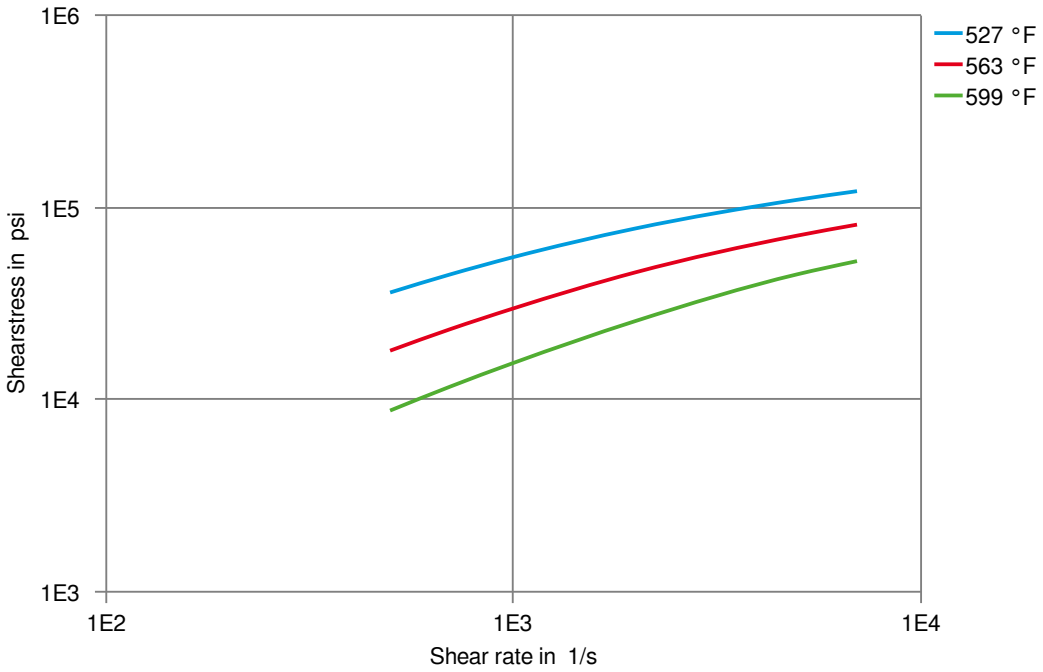
Viscosity-shear rate



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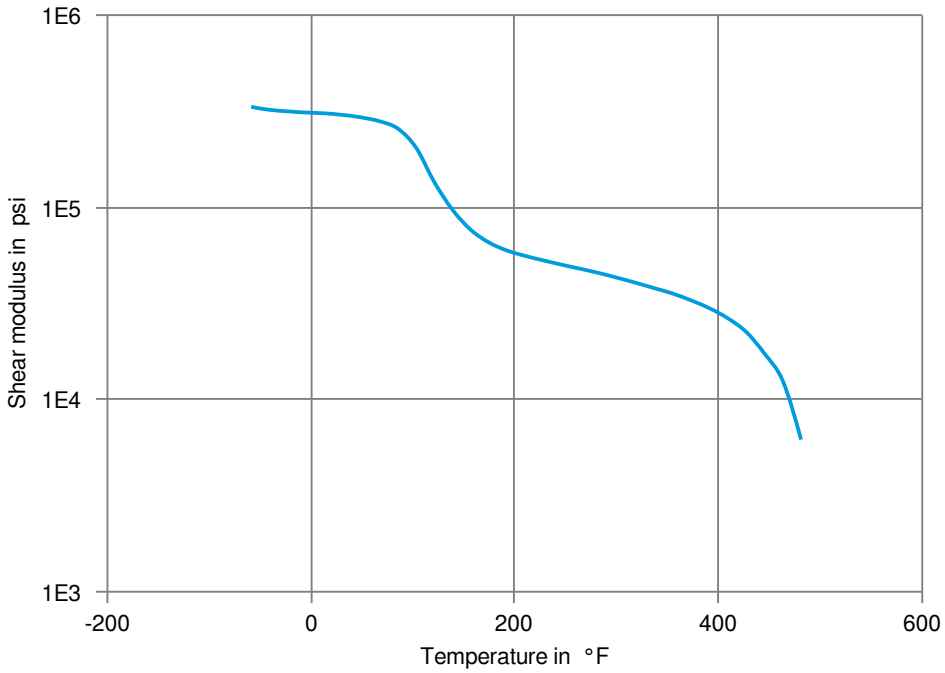
Shearstress-shear rate



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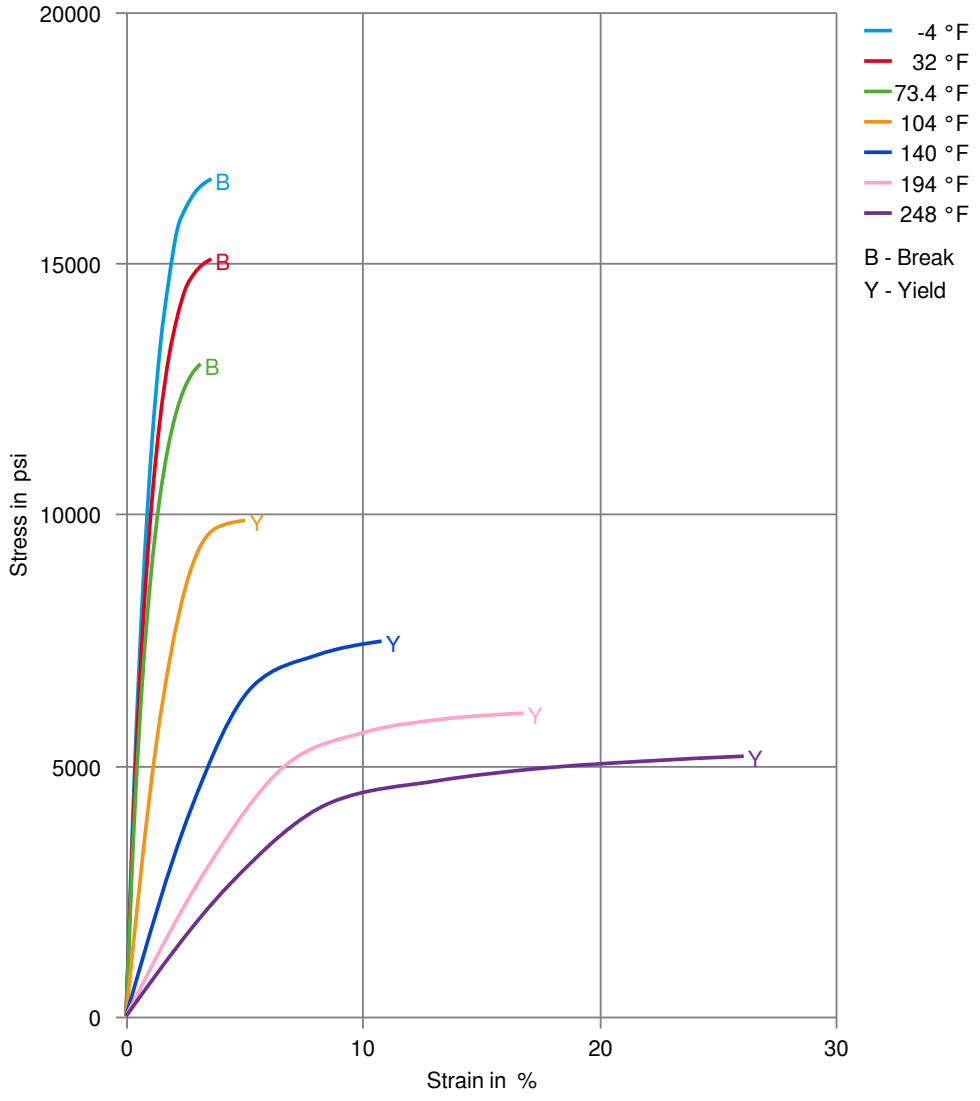
Dynamic Shear modulus-temperature (dry)



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Stress-strain (dry)

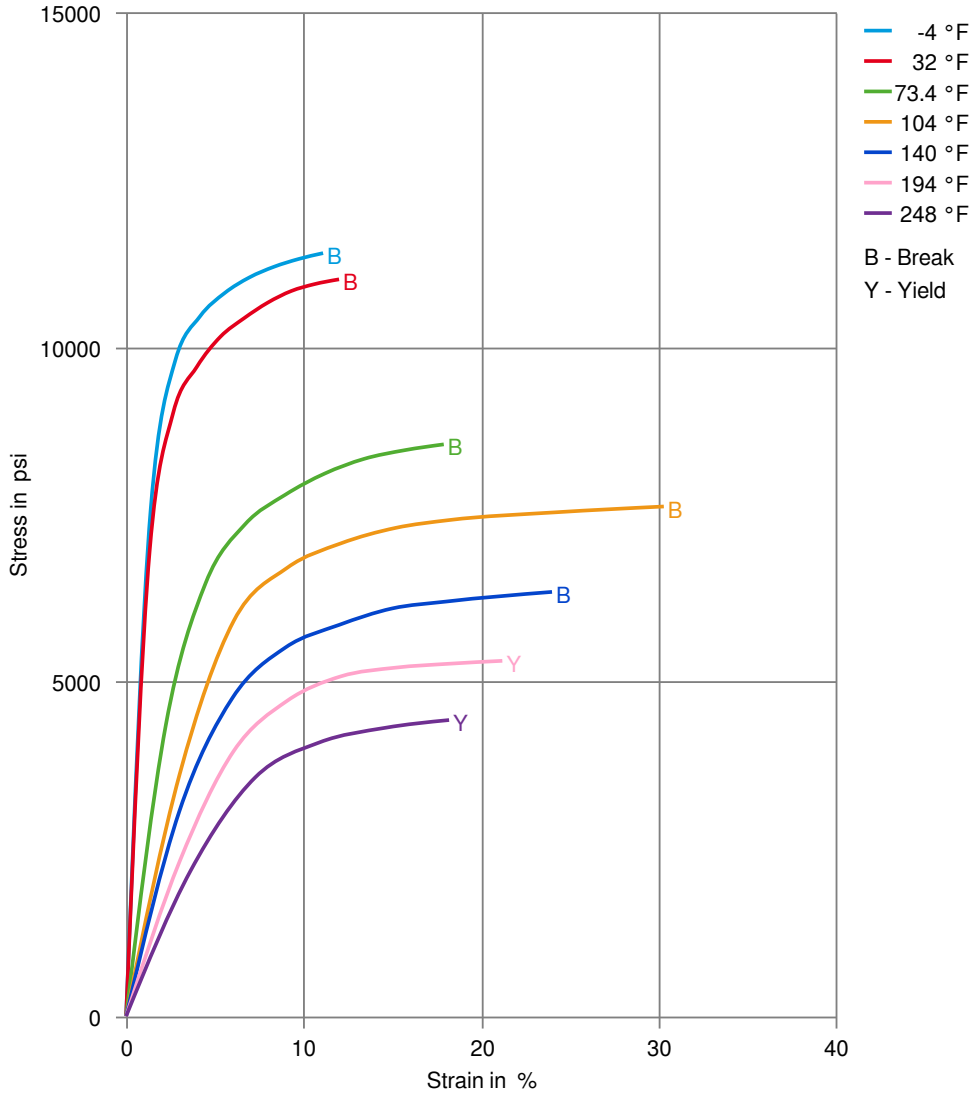


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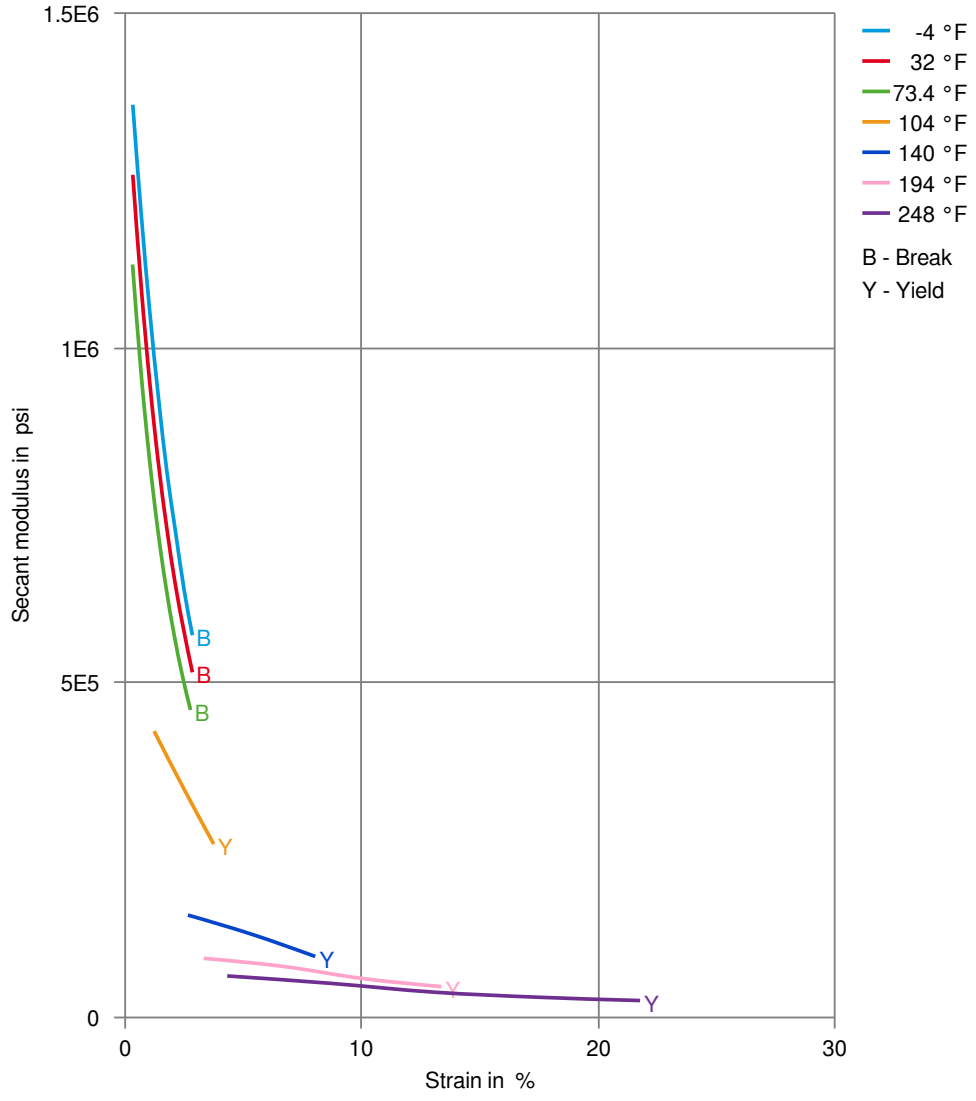
Stress-strain (cond.)



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Secant modulus-strain (dry)

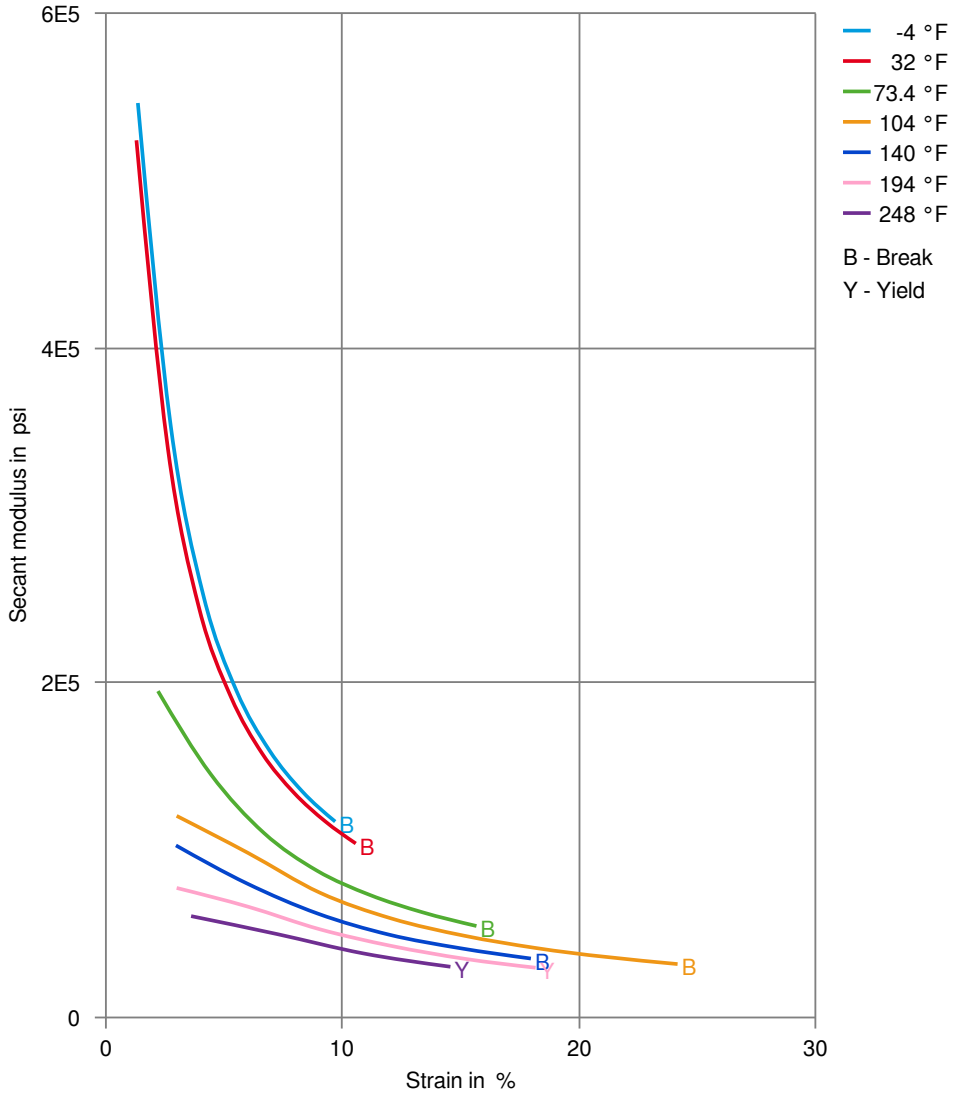


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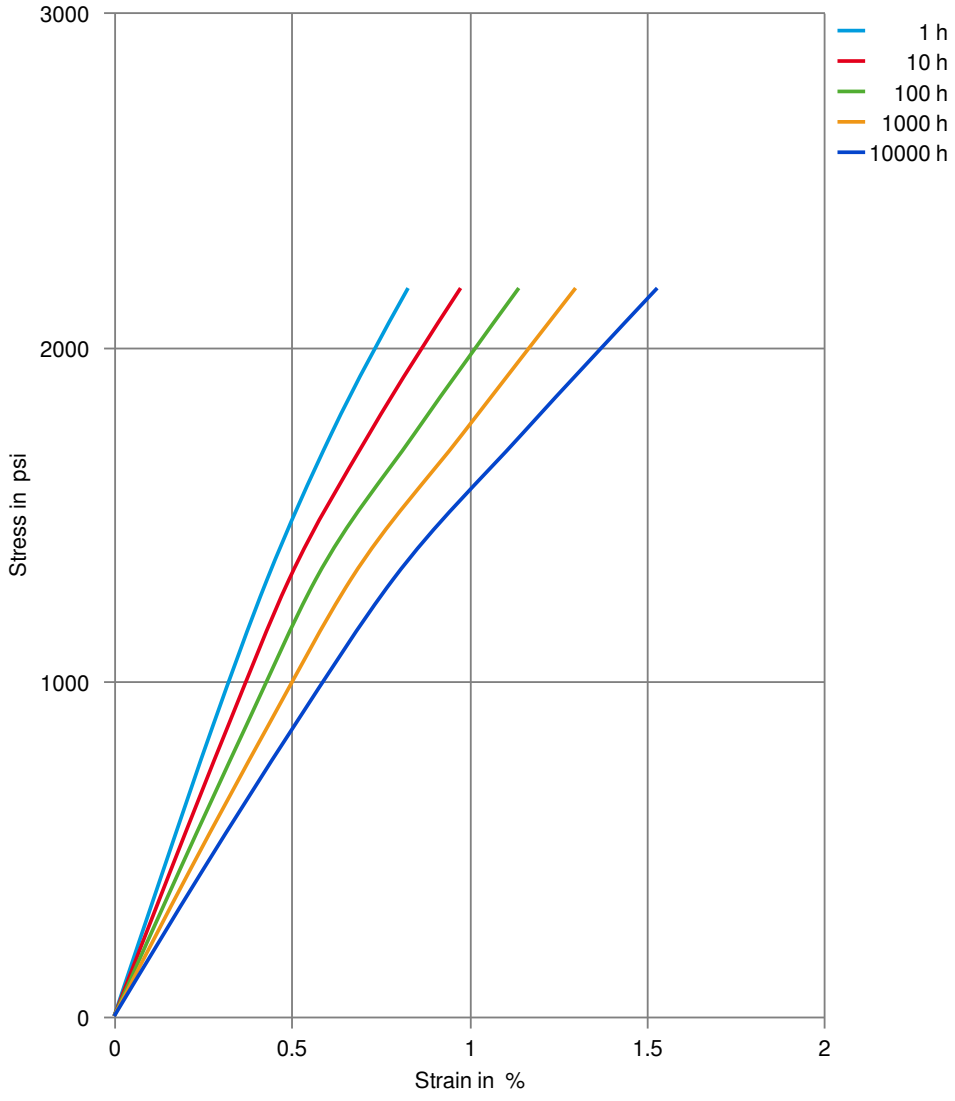
Secant modulus-strain (cond.)



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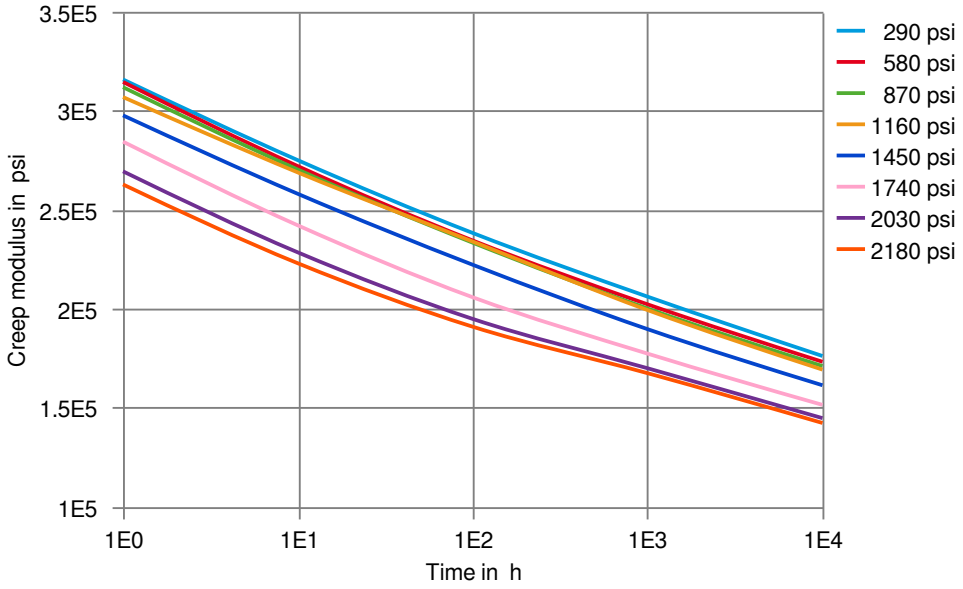
Stress-strain (isochronous) 73.4 °F (cond.)



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MINERAL REINFORCED NYLON RESIN

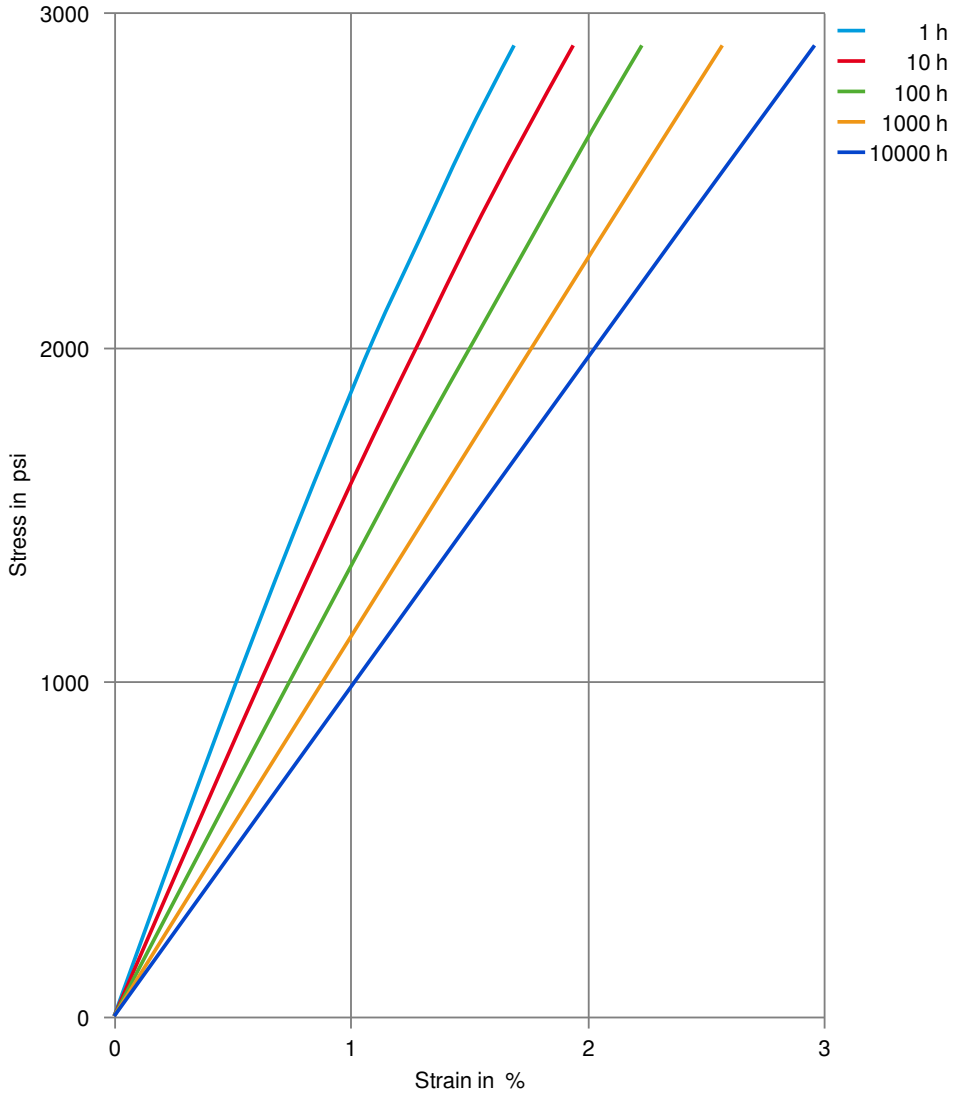
Creep modulus-time 73.4 °F (cond.)



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MINERAL REINFORCED NYLON RESIN

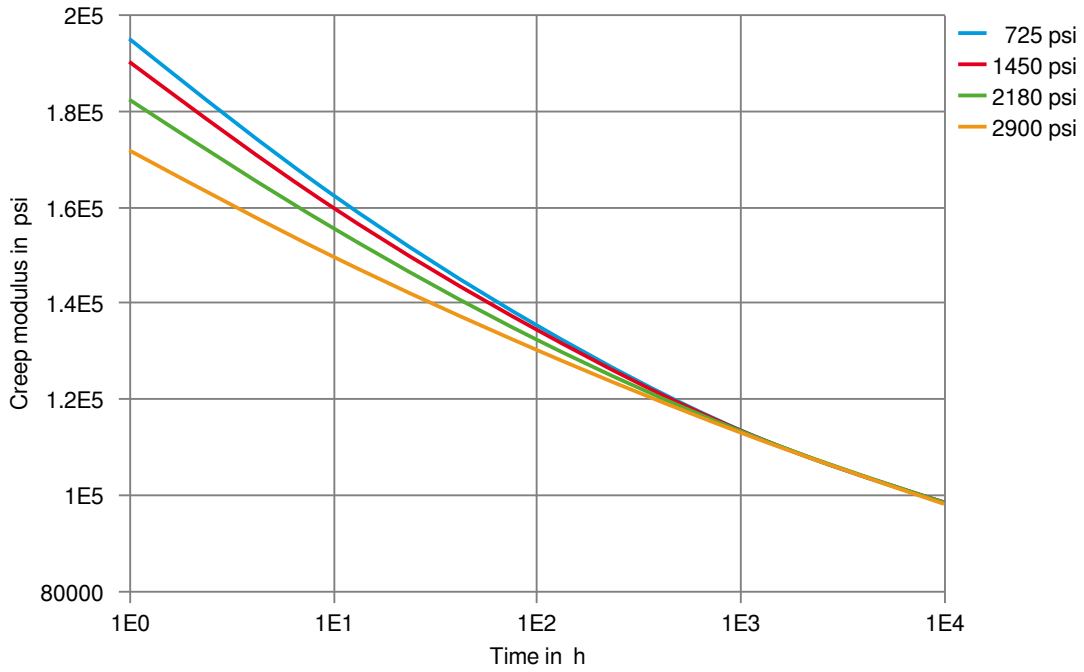
Stress-strain (isochronous) 140 °F (cond.)



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MINERAL REINFORCED NYLON RESIN

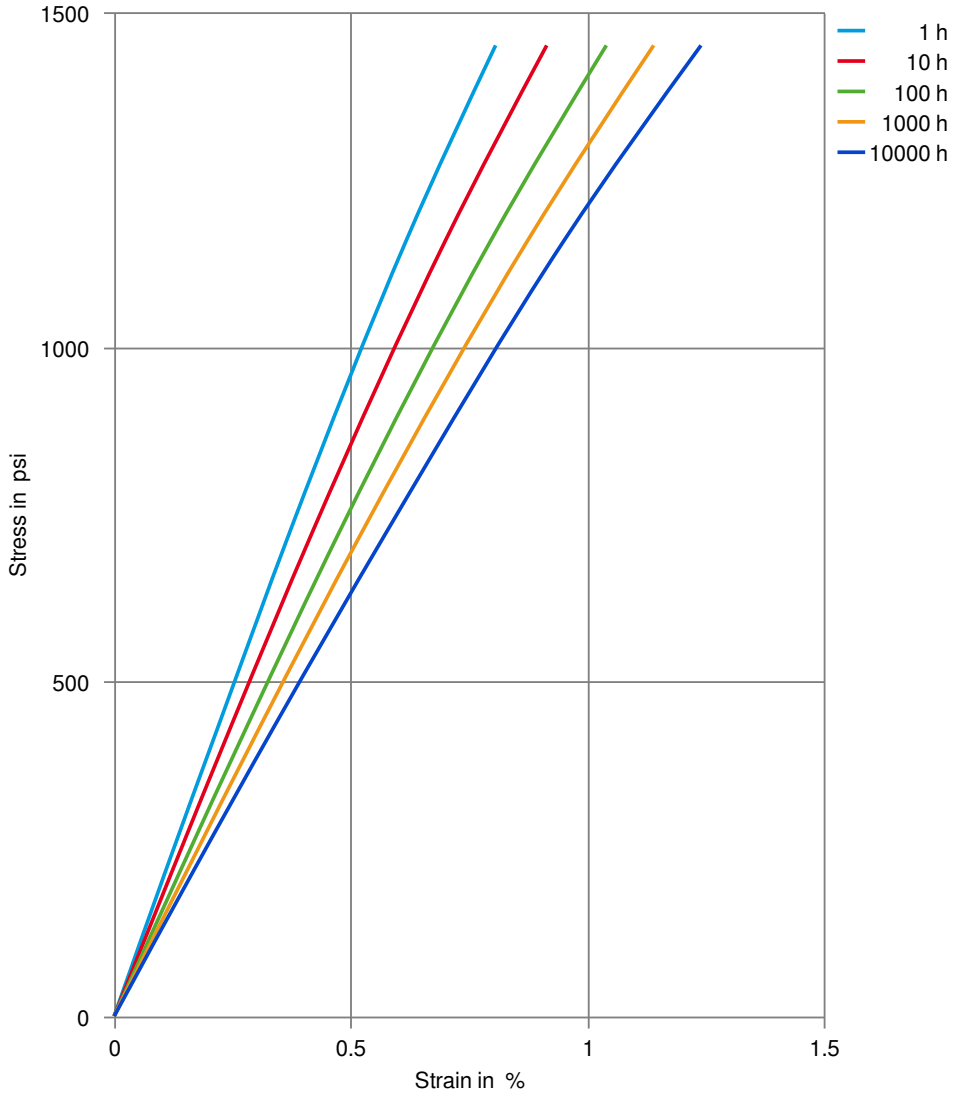
Creep modulus-time 140 °F (cond.)



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MINERAL REINFORCED NYLON RESIN

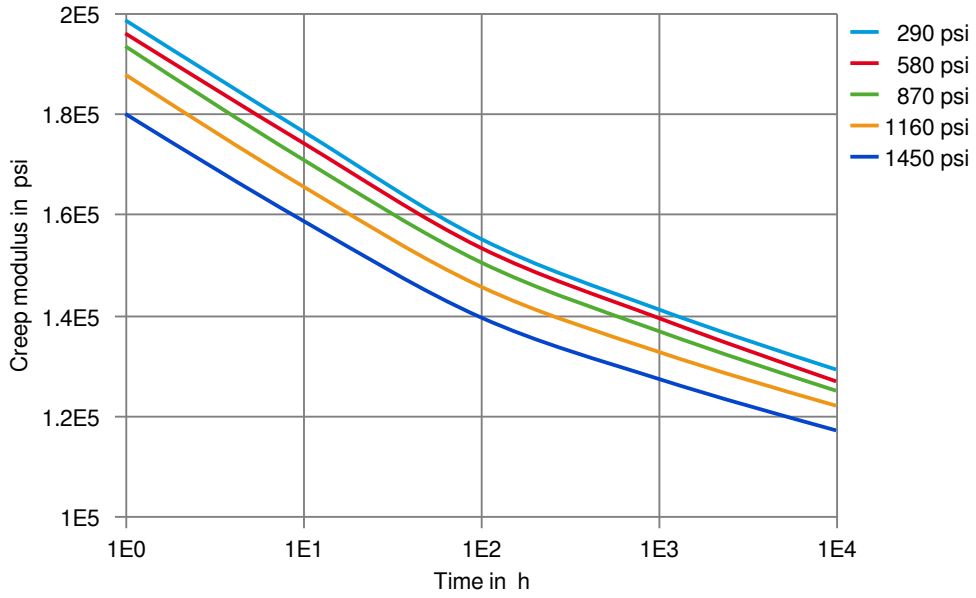
Stress-strain (isochronous) 176 °F (cond.)



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MINERAL REINFORCED NYLON RESIN

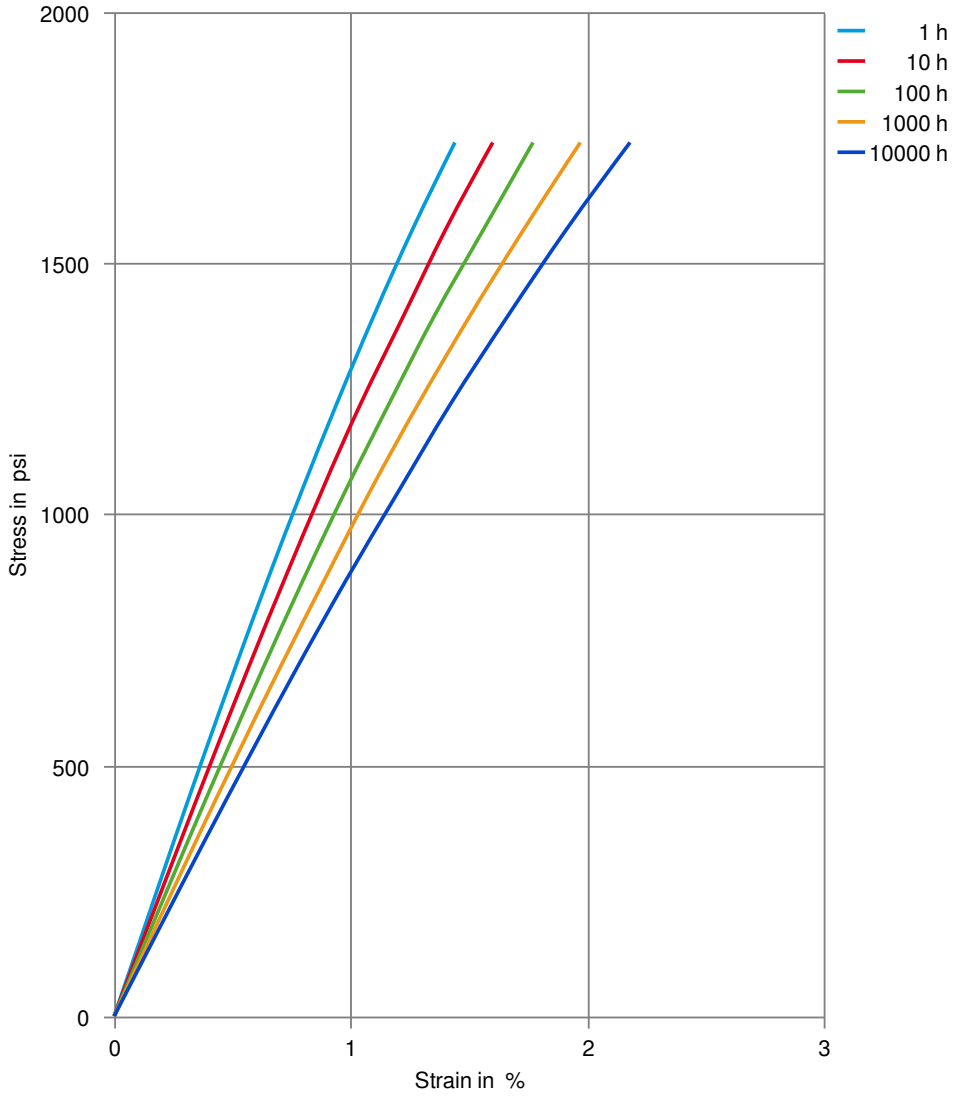
Creep modulus-time 176 °F (cond.)



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MINERAL REINFORCED NYLON RESIN

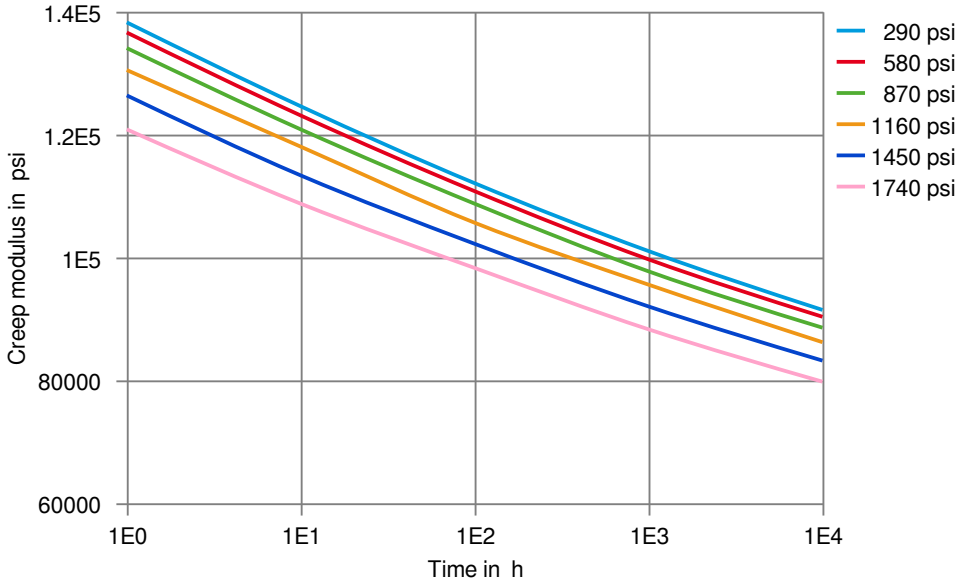
Stress-strain (isochronous) 212°F (cond.)



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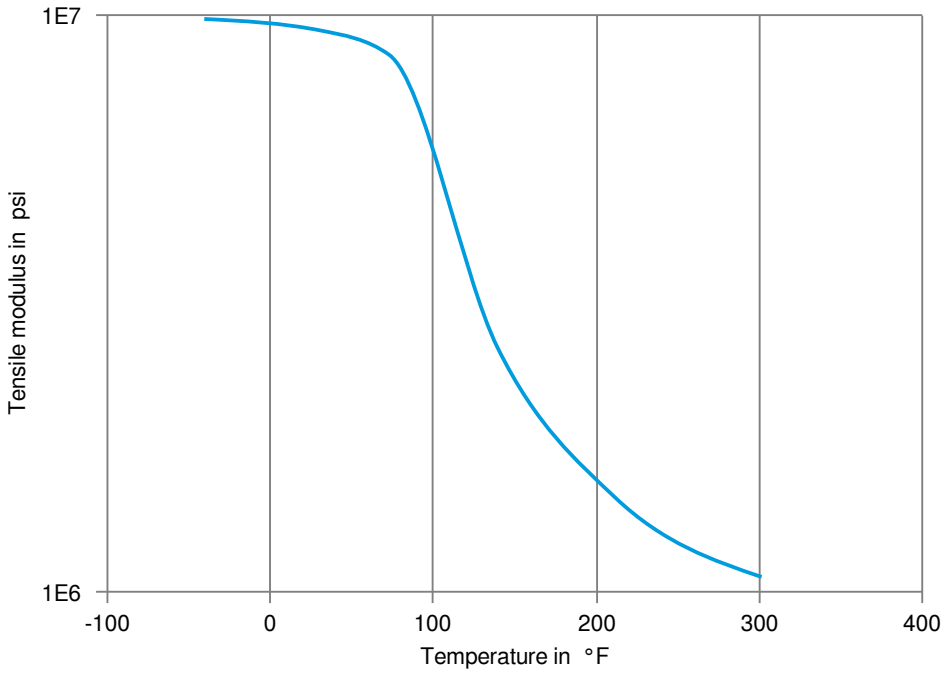
Creep modulus-time 212°F (cond.)



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Tensile modulus-temperature (dry)



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Chemical Media Resistance

Acids

- ✔ Acetic Acid (5% by mass), 23°C
- ✔ Citric Acid solution (10% by mass), 23°C
- ✔ Lactic Acid (10% by mass), 23°C
- ✘ Hydrochloric Acid (36% by mass), 23°C
- ✘ Nitric Acid (40% by mass), 23°C
- ✘ Sulfuric Acid (38% by mass), 23°C
- ✘ Sulfuric Acid (5% by mass), 23°C
- ✘ Chromic Acid solution (40% by mass), 23°C

Bases

- ✘ Sodium Hydroxide solution (35% by mass), 23°C
- ✔ Sodium Hydroxide solution (1% by mass), 23°C
- ✔ Ammonium Hydroxide solution (10% by mass), 23°C

Alcohols

- ✔ Isopropyl alcohol, 23°C
- ✔ Methanol, 23°C
- ✔ Ethanol, 23°C

Hydrocarbons

- ✔ n-Hexane, 23°C
- ✔ Toluene, 23°C
- ✔ iso-Octane, 23°C

Ketones

- ✔ Acetone, 23°C

Ethers

- ✔ Diethyl ether, 23°C

Mineral oils

- ✔ SAE 10W40 multigrade motor oil, 23°C
- ✔ SAE 10W40 multigrade motor oil, 130°C
- ✔ SAE 80/90 hypoid-gear oil, 130°C
- ✔ Insulating Oil, 23°C

Standard Fuels

- ✔ ISO 1817 Liquid 1 - E5, 60°C
- ✔ ISO 1817 Liquid 2 - M15E4, 60°C
- ✔ ISO 1817 Liquid 3 - M3E7, 60°C
- ✔ ISO 1817 Liquid 4 - M15, 60°C
- ✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✔ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✘ Diesel fuel (pref. ISO 1817 Liquid F), >90°C

Salt solutions

- ✔ Sodium Chloride solution (10% by mass), 23°C
- ✘ Sodium Hypochlorite solution (10% by mass), 23°C

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- ✔ Sodium Carbonate solution (20% by mass), 23°C
- ✔ Sodium Carbonate solution (2% by mass), 23°C
- ✘ Zinc Chloride solution (50% by mass), 23°C

Other

- ✔ Ethyl Acetate, 23°C
- ✘ Hydrogen peroxide, 23°C
- ✔ DOT No. 4 Brake fluid, 130°C
- ✔ Ethylene Glycol (50% by mass) in water, 108°C
- ✔ 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✔ 50% Oleic acid + 50% Olive Oil, 23°C
- ✔ Water, 23°C
- ✘ Water, 90°C
- ✘ Phenol solution (5% by mass), 23°C

Symbols used:

✔ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

✘ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

Revised: 2025-07-23 Source: Celanese Materials Database

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